

# TRIG TEST SOLUTIONS

1) a    2) c    3) b    4) d    5) d

6) b    7) c    8) a or c    9) Not on this test

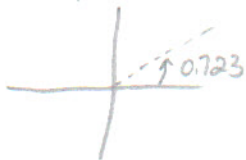
10)  $\cos \theta = \frac{3}{4}$

cos is + in Q1, Q4

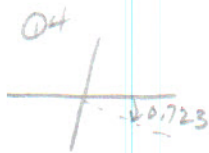
$\cos \beta = \frac{3}{4}$

$\beta = 0.723 \text{ rads}$

Q1



$\theta_1 = 0.723 \text{ rads}$



$\theta = 2\pi - 0.723$

$\theta_2 = 5.557 \text{ rads}$

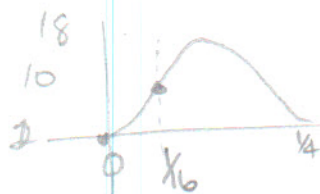
$\theta = 0.723 + 2\pi n \text{ or } 5.557 + 2\pi n$

11)  $\text{amp} = 8$

$\text{EOA} = 2 + 8 = 10$

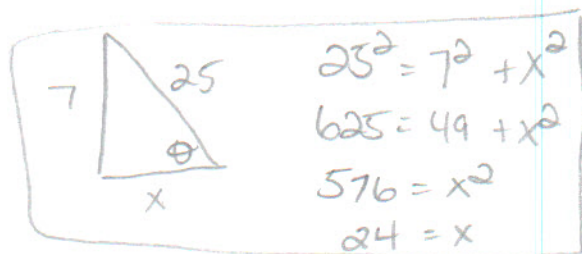
period  $\frac{1}{4} \text{ s}$

$k = \frac{2\pi}{\frac{1}{4}}$   
 $= 8\pi$



$y = 8 \sin[8\pi(x - \frac{1}{16})] + 10$

$$12) \sin \theta = \frac{7}{25}$$



don't need

$$\begin{aligned} \cos 2\theta &= 1 - 2\sin^2 \theta \\ &= 1 - 2\left(\frac{7}{25}\right)^2 \\ &= 1 - 2\left(\frac{49}{625}\right) \\ &= 1 - \frac{98}{625} \\ &= \frac{625 - 98}{625} \\ &= \frac{527}{625} \end{aligned}$$

$$\begin{aligned} 13a) \sin \frac{5\pi}{4} \\ &= -\sin \frac{\pi}{4} \\ &= -\frac{\sqrt{2}}{2} \end{aligned}$$

$$\begin{aligned} b) \cos \frac{11\pi}{6} \\ &= \cos \frac{\pi}{6} \\ &= \frac{\sqrt{3}}{2} \end{aligned}$$

c) This one is mean!

$$\tan \frac{\pi}{4} = \frac{2 + \tan(\pi/8)}{1 - \tan^2(\pi/8)}$$

$$1 = \frac{2 + \tan(\pi/8)}{1 - \tan^2(\pi/8)}$$

$$1 - \tan^2(\pi/8) = 2 + \tan(\pi/8)$$

$$0 = \tan^2(\pi/8) + 2\tan(\pi/8) - 1$$

$$\text{let } u = \tan(\pi/8)$$

$$0 = u^2 + 2u - 1$$

$$d) \csc\left(\frac{7\pi}{12}\right)$$

$$= \frac{1}{\sin\left(\frac{7\pi}{12}\right)}$$

$$= \frac{1}{\sin\left(\frac{4\pi}{12} + \frac{3\pi}{12}\right)}$$

$$= \frac{1}{\sin\left(\frac{\pi}{3} + \frac{\pi}{4}\right)}$$

$$= \frac{1}{\sin \pi/3 \cos \pi/4 + \sin \pi/4 \cos \pi/3}$$

$$= \frac{1}{\left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right)}$$

$$= \frac{1}{\frac{\sqrt{6}}{2} + \frac{\sqrt{2}}{2}}$$

$$= \frac{1}{\frac{\sqrt{6} + \sqrt{2}}{2}}$$

$$= \frac{2}{\sqrt{6} + \sqrt{2}}$$

Quadratic formula  
or complete the square

$$14a) 3\sin^2 x - 3\sin^2 x + 4\sin x + 8\sin x - 9 - 10 = 0$$

$$12\sin x - 19 = 0$$

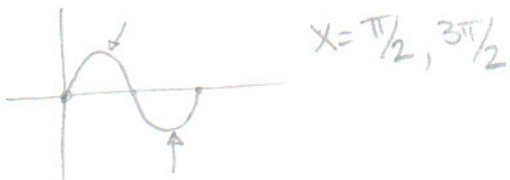
$$\sin x = \frac{19}{12}$$

$$x = \text{No solution} \quad -1 \leq \sin x \leq 1$$

$\frac{19}{12}$  outside range

$$b) \sin^2 x = 1$$

$$\sin x = \pm 1$$



$$c) 10\sin^2 x + \sin x - 2 = 0$$

$$(5\sin x - 2)(2\sin x + 1) = 0$$

$$5\sin x = 2$$

$$\sin x = \frac{2}{5}$$

$$x = 0.41 \text{ rads} \\ \text{or } 2.73 \text{ rads}$$

$$2\sin x = -1$$

$$\sin x = -\frac{1}{2}$$

$$x = \frac{7\pi}{6} \text{ or } \frac{11\pi}{6}$$